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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
DUNSTON, JENNIFER ANN	
ART UNIT	**PAPER NUMBER**
1636	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/826,523	FRASER ET AL.	
	Examiner	Art Unit	
	Jennifer Dunston	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9,11 and 16* is/are allowed.

6)☒ Claim(s) *10,12-15 and 17-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/22/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

8.00

DETAILED ACTION

This action is in response to the amendment, filed 5/10/2005, in which claims 1-8 were canceled; claims 10 and 13-19 were amended; and claims 20-32 were newly added. Applicants' arguments have been thoroughly reviewed, but are not persuasive for the reasons that follow. Any rejections and objections not reiterated in this action have been withdrawn. **This action is FINAL.**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Information Disclosure Statement

Receipt of an information disclosure statement, filed on 2/22/2005, is acknowledged. The signed and initialed PTO 1449 has been mailed with this action.

The information disclosure statement filed 2/22/2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. The references for which copies were not supplied have not considered.

Drawings

The drawings were received on 5/10/2005. These drawings are acceptable.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 is vague and indefinite in that the metes and bounds of the phrase "wherein ITR1.1k is as shown in FIG. 25" are unclear. The phrase is unclear in that the only reference made to ITR1.1k in Figure 25 is in the context of the pBSII-ITR1.1K-ECFP plasmid. According to the figure legend, the figure depicts plasmids. It is unclear as to whether claim 10 is referring to plasmid pBSII-ITR1.1k-ECFP. Alternatively, the claim could be referring only to the plasmid insert depicted next to the name "pBSII-ITR1.1k-ECFP". There is no genetic cartridge explicitly labeled as "ITR1.1k" in Figure 25.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10, 12, 13 and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 10 is drawn to a genetic cartridge designated ITR1.1k. Claims 12 and 13 are drawn to vectors designated pXL-BacII-ECFP and pBSII-ITR1.1k-ECFP, respectively, as shown in Figure 24. Claim 17 encompasses the step of obtaining the ITR1.1k cartridge.

The application discloses the abovementioned cartridge and vectors that are encompassed by the definitions for **biological material** set forth in 37 C.F.R. § 1.801. Because it is apparent that this biological material is essential for practicing the claimed invention, it must be obtainable by a reproducible method set forth in the specification or otherwise be known and readily available to the public as detailed in 37 C.F.R. §§ 1.801 through 1.809.

It is unclear whether this biological material is known and readily available to the public or that the written instructions are sufficient to reproducibly construct this biological material from starting materials known and readily available to the public. The specification does not appear to describe the nucleic acid sequences of the cartridge or vectors. Accordingly, availability of such biological material is deemed necessary to satisfy the enablement provisions of 35 U.S.C. § 112. If this biological material is not obtainable or available, the requirements of 35 U.S.C. § 112 may be satisfied by a deposit of the biological material. In order for a deposit to meet all criteria set forth in 37 C.F.R. §§ 1.801-1.809, applicants or assignee must provide assurance of compliance with provisions of 37 C.F.R. §§ 1.801-1.809, in the form of a declaration or applicant's representative must provide a statement. The content of such a declaration or statement is suggested by the enclosed attachment. Because such deposit will not have been made prior to the effective filing date of the instant application, applicant is required

to submit a verified statement from a person in a position to corroborate the fact, which states that the biological material which has been deposited is the biological material specifically identified in the application as filed (37 C.F.R. § 1.804). Such a statement need not be verified if the person is an agent or attorney registered to practice before the Office. Applicant is also reminded that the specification must contain reference to the deposit, including deposit (accession) number, date of deposit, name and address of the depository, and the complete taxonomic description. A statement that all restrictions on the availability to the public of the material so deposited will be irrevocably removed upon granting of a patent is also required.

Claims 28-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. **This is a new matter rejection.**

Claim 28 is drawn to a transposable genetic construct comprising either a pair of 5' minimal sequences (i.e. two 5' minimal sequences) or a pair of 3' minimal sequences (i.e. two 3' minimal sequences. While the specification describes numerous genetic constructs comprising minimal repeat sequences comprising a terminal repeat domain, there is not a single instance where two 5' minimal sequences are combined. Further, there is not a single instance where two 3' minimal sequences are combined. In contrast, the specification states, "The minimal operational requirement for 5' ID sequences is therefore between 276 and 101 bp when coupled to a minimal 3' ID sequence of 172 bp." See paragraph [110]. Further, Figures 24-28 only

describe a single 5' minimal sequence combined with a single 3' minimal sequence. Thus, the combination of a single 5' minimal sequence and a single 3' minimal sequence appears to be the only combination contemplated by the instant specification.

Therefore, the specification does not provide support for the broad genus of genetic constructs comprising a pair of 5' minimal sequences and does not provide support for the broad genus of genetic constructs comprising a pair of 3' minimal sequences.

Response to Arguments--35 USC § 112

Applicant's arguments filed 5/10/2005 have been fully considered but they are not persuasive. The response asserts that the specification adequately describes to one skilled in the art how to prepare the ITR1.1k, pXL-BacII-ECFP and pBSII-ITR1.1k-ECFP constructs as shown in Figure 25, paragraph [97], and paragraph [109]. Figure 25 depicts a schematic illustration of *piggyBac* internal deletion series plasmids. Each of the constructs has a deletion relative to the pIAO-P/L-589bp construct. Although the sequence is provided for pIAO-P/L (SEQ ID NO: 57), the entire nucleic acid sequence of pIAO-P/L-589bp or the claimed sequences for ITR1.1k, pXL-BacII-ECFP, or pBSII-ITR1.1k-ECFP does not appear to be provided by the instant specification. Paragraph [97] refers to the Li et al reference (Li et al, Mol. Genet. Gen, 266(2): pp. 190-8, 2001) for a description of the pIAO-P/L-589bp plasmid. However, the complete sequence of the plasmid does not appear to be provided by the reference. Furthermore, the plasmid is a combination of sequences from plasmid pIAO-polh/lacZ and bacteriophage lambda. It is unclear as to whether the pIAO-polh/lacZ plasmid or the materials necessary to make this plasmid are readily available to the public. Moreover, paragraph [97] refers to a number of

different primers, which are schematically depicted in Figure 25; however no sequence identifiers are provided for the primer names. Based upon the description provided in this paragraph, it is unclear what sequence is actually being amplified to make the constructs. Paragraph [109] does not provide sufficient information to make the claimed constructs. It is noted that paragraphs [74]-[92] provide detailed information on the construction of the genetic constructs; however, it is not clear that the starting materials necessary to follow the description of how to prepare the ITR1.1k, pXL-BacII-ECFP, and pBSII-ITR1.1k-ECFP constructs are readily available to the public.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14, 15 and 18-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Cary et al (Virology, Vol. 172, No. 1, pages 156-169, 1989, cited in a prior action; see the entire reference). **This rejection has been altered to address the amendments to the claims.**

The claims are drawn to genetic constructs. The specification defines the term "genetic construct" as "any artificially assembled combination of DNA sequences" (paragraph [33]). The specification defines the term "spacer" as sequences (paragraph [29]).

Regarding claim 20, Cary et al teach a genetic construct comprising the entire *piggyBac* (i.e. IFP2) molecule in the pUC8 plasmid vector (e.g. page 157, right column). The *piggyBac*

molecule includes a right terminal repeat, a right internal repeat, a left internal repeat and a left terminal repeat (e.g. Figures 2 and 5). Cary et al teach the TTAA target site adjacent to the 5' terminal repeat domain of 35 nucleotide base pairs, and a TTAA target site adjacent to the 3' terminal repeat domain of 63 nucleotide base pairs, which are separated by a spacer sequence (e.g. Figure 2C and Figure 5). The total length of the *piggyBac* molecule taught by Cary et al is 2475 nucleotides (e.g. Figure 5). Therefore, the genetic construct taught by Cary et al comprises a spacer of at least 40 nucleotide base pairs.

Regarding claim 21, Cary et al teach the genetic construct with the spacer flanked by the 5' terminal repeat domain at one end and the 3' terminal repeat domain at the other end (e.g. Figures 2 and 5).

Regarding claim 22, Cary et al teach the genetic construct with a spacer of at least 55 nucleotide base pairs (e.g. Figure 5).

Regarding claim 14, Cary et al teach the DNA molecule according to claim 20 (e.g. GmFP2 (page 157, Cloning and physical mapping of IFP2 insertions from FP mutant viruses; Figures 2 and 5). Cary et al teach the digestion of pGMFP2 with SalI and insertion into plasmid pUC8 to produce the plasmid pGmFP2 S/S (e.g. page 157, Cloning and DNA sequence analysis; Figure 2a).

Regarding claim 18, Cary et al teach the molecule of claim 20 further comprising plasmid sequence capable of being transferred to a cell (e.g. page 157, right column; Figures 2 and 5).

Regarding claim 23, Cary et al teach a genetic construct comprising the entire *piggyBac* (i.e. IFP2) molecule in the pUC8 plasmid vector (e.g. page 157, right column). The *piggyBac* molecule includes a right terminal repeat, a right internal repeat, a left internal repeat and a left

terminal repeat (e.g. Figures 2 and 5). Cary et al teach the TTAA target site adjacent to the 5' terminal repeat domain of 35 nucleotide base pairs and more than 66 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule; and a TTAA target site adjacent to the 3' terminal repeat domain of 63 nucleotide base pairs and at least 172 nucleotide base pairs of the adjacent 3' internal domain sequence of the *piggyBac* molecule, which are separated by a spacer sequence that is at least 40 nucleotide base pairs in length (e.g. Figure 2C and Figure 5). The total length of the *piggyBac* molecule taught by Cary et al is 2475 nucleotides (e.g. Figure 5). Therefore, the genetic construct taught by Cary et al comprises a spacer of at least 40 nucleotide base pairs.

Regarding claim 24, Cary et al teach the genetic construct with the spacer flanked by the 5' terminal repeat domain at one end and the 3' terminal repeat domain at the other end (e.g. Figures 2 and 5).

Regarding claim 25, Cary et al teach a 5' minimal sequence comprising at least 241 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule (e.g. Figure 5).

Regarding claim 26, Cary et al teach a 5' minimal sequence comprising at least 276 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule (e.g. Figure 5).

Regarding claim 27, Cary et al teach the genetic construct with a spacer of at least 55 nucleotide base pairs (e.g. Figure 5).

Regarding claim 15, Cary et al teach the DNA molecule according to claim 23 (e.g. GmFP2 (page 157, Cloning and physical mapping of IFP2 insertions from FP mutant viruses;

Figures 2 and 5). Cary et al teach the digestion of pGMFP2 with SalI and insertion into plasmid pUC8 to produce the plasmid pGmFP2 S/S (e.g. page 157, Cloning and DNA sequence analysis; Figure 2a).

Regarding claim 19, Cary et al teach the molecule of claim 20 further comprising plasmid sequence capable of being transferred to a cell (e.g. page 157, right column; Figures 2 and 5).

Response to Arguments--35 USC § 102

Applicant's arguments filed 5/10/2005 have been fully considered but they are not persuasive.

Regarding claims 18 and 20-22, the response asserts that Cary et al does not teach or suggest the minimal transposable *piggyBac* genetic construct of claims 20-22 comprising the spacer of at least 40 nucleotide base pairs and having at least one 5' and 3' minimal sequence comprising the target site and base pairs of the respective terminal repeat domain adjacent to at least one end of the spacer. This is not found persuasive because the specification defines a spacer broadly as a sequence (paragraph [29]). Although the specification sets forth some examples of a spacer structure, it is done in the context of "includes and encompasses" and thus the term is not defined by those examples since other unmentioned sequences may also be spacers. Therefore, the sequence contained between the terminal repeat domains in Figure 5 of the Cary et al reference is a spacer of at least 40 nucleotide base pairs. Further, the genetic construct taught by Cary et al comprises 5' and 3' minimal sequence each comprising a TTAA target sites, wherein the 5' and 3' minimal sequences flank the spacer (see the above rejection).

Regarding claims 15, 19 and 23-27, the response asserts that Cary et al does not teach or suggest the genetic construct comprising at least one 5' and 3' minimal sequence comprising the target site and the respective terminal repeat domain and adjacent internal domain sequence. This is not persuasive because the specification defines a spacer broadly as a sequence (paragraph [29]) and Cary et al teach each of the limitations of the claims (see the above rejection).

For these reasons, and the reasons set forth in the above rejection, the rejected claims are anticipated by Cary et al.

Conclusion

Claims 9, 11 and 16 are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Dunston whose telephone number is 571-272-2916. The examiner can normally be reached on M-F, 9 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel can be reached at 571-272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR, http://pair-direct.uspto.gov) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Jennifer Dunston
Examiner
Art Unit 1636

jad

TERRY MCKELVEY
PRIMARY EXAMINER

SUGGESTION FOR DEPOSIT OF BIOLOGICAL MATERIAL

A declaration by applicant or assignee, or a statement by applicant's agent identifying a deposit of biological material and averring the following may be sufficient to overcome an objection or rejection based on a lack of availability of biological material. Such a declaration:

1. Identifies declarant.

2. States that a deposit of the material has been made in a depository affording permanence of the deposit and ready accessibility thereto by the public if a patent is granted. The depository is to be identified by name and address. (See 37 C.F.R. § 1.803).

3. States that the deposited material has been accorded a specific (recited) accession number.

4. States that all restrictions on the availability to the public of the material so deposited will be irrevocably removed upon the granting of the patent. (See 37 C.F.R. § 1.808(a)(2)).

5. States that the material has been deposited under conditions that assure that access to the material will be available during the pendency of the patent application to one determined by the Commissioner to be entitled thereto under 37 C.F.R. § 1.14 and 35 U.S.C. § 122. (See 37 C.F.R. § 1.808(a)(1)).

6. States that the deposited material will be maintained with all the care necessary to keep it viable and uncontaminated for a period of at least five years after the most recent request for the furnishing of a sample of the deposited microorganism, and in any case, for a period of at least thirty (30) years after the date of deposit or for the enforceable life of the patent, whichever period is longer. See 37 C.F.R. § 1.806).

7. That he/she declares further that all statements made therein of his/her own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the instant patent application or any patent issuing thereon.

Alternatively, it may be averred that deposited material has been accepted for deposit under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (e.g., see 961 OG 21, 1977) and that all restrictions on the availability to the public of the material so deposited will be irrevocably removed upon the granting of a patent.

Additionally, the deposit must be referred to in the body of the specification and be identified by deposit (accession) number, date of deposit, name and address of the depository, and the complete taxonomic description.